

Use mechanisms of the Holographic Interferometry in Sciences of Visual Arts: analytical theoretical study

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This paper focuses on some of the advanced holography uses, including their scientific concepts and techniques, but via relatively different aspect about that usually is used for scientific purposes. Current holographic scientific developments in sciences of visual arts will be discussed in this research. According to sciences of visual arts, three main holographic mechanisms have been classified in this research: laser interferometry, holographic recording (analog & digital) and holographic stereogram that are used in installation art, simulation art and real time art, respectively.

Three major questions could be answered through this research: To what extent can holographic mechanisms be similarly used in both of optics sciences and processes in sciences of visual arts? Can sciences of visual arts translate the scientific principles and concepts of holographic interferometry theoretically and practically? What is the nature of the contribution that can be provided by both of optics science and sciences of visual arts to enhance the practical holographic techniques? this analytical study aimed to design analytical descriptive diagram that can illustrate and compare the progression steps between holographic techniques and their usage in visual arts processes via two parallel lines, through documenting some of the leading examples in visual arts that have not only proven the depth of laser applications but also achieved considerable shifts in some of artistic trends and the natural of creation processes in visual innovative works, where the optics labs became studios for artists, which usually prefer show their scientific artworks in public space and that is why some of complicated scientific techniques became well known in public communities.



A



B

Fig. 1 Two leading examples of holographic interferometry and analog holography recording, A: Shawn Brixey, *Celestial Vaulting*, 1990, Ohio, USA. B: Margaret Benyon, *TiGirl*, 1985, Victoria & Albert Museum, London.

In his installation entitled *Celestial Vaulting* fig1.A, Brixey was aiming to create a holographic interferometry installation that uses real-time optical laser holography to determine the minute time-of-flight difference between phases entangled photons at the speed of light, while In Benyon's portrait, holographic patterns on the face of the artist are combined with the stripes on a tiger's head, a vertical strip dividing the tiger's mask aligns both animal and human eyes, to create a haunting image. The light and dark patterns are produced by putting the pulsed laser into "double-pulse" mode.

References

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